

What is claimed is:

1. A method for tracking the location of mobile units, comprising the steps of:

providing a plurality of mobile units each having a wireless transmitter and a unique address and at least one stationary base unit having a phase array antenna with antenna elements;

receiving a signal including an address from at least one mobile unit at the at least one base unit via the phase array antenna;

measuring the phase difference of the signal arriving at the antenna elements of the phase array antenna from each mobile unit; and

calculating the coordinates of the location of each mobile unit as a function of the phase difference.

2. The method according to claim 1, wherein the step of measuring the phase difference is performed in the at least one base unit.

3. The method according to claim 2, wherein the step of calculating the coordinates is performed in a main unit connected to the at least one base unit.

4. The method according to claim 3, wherein each

mobile unit has at least one sensor and the signal includes an information signal from the at least one sensor and wherein the information signal is processed by the main unit.

5. The method according to claim 1, wherein the wireless transmitter is a transceiver.

6. The method according to claim 1, wherein the step of calculating the coordinates comprises calculating the polar coordinates of each mobile unit.

7. The method according to claim 1, comprising at least two base units disposed at a predetermined distance from each other and wherein the step of calculating the coordinates of each mobile unit comprises measuring the azimuth of the signal from a mobile unit received at each base unit and calculating the coordinates of the location of the mobile unit as a function of the azimuths.

8. The method according to claim 1, further comprising the step of providing at least one reference wireless transmitter disposed at a fixed location and having a unique identifying address and calibrating the accuracy of the calculation of the coordinates of the mobile units using the at least one reference transmitter.

measuring the phase difference between the signal arriving at each antenna element from the at least one reference transmitter;

calculating the coordinates of the location of the at least one reference transmitter; and

correcting future calculations by the difference between the calculated coordinates of the at least one reference transmitter and the actual location of the at least one reference transmitter.

13. The method according to claim 12, wherein the step of measuring the phase difference is performed in the at least one base unit.

14. The method according to claim 13, wherein the step of calculating the coordinates is performed in a main unit connected to the at least one base unit.

15. The method according to claim 12, wherein the wireless transmitter is a transceiver.

16. The method according to claim 12, wherein the calculated coordinates are polar coordinates.

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A1

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B1